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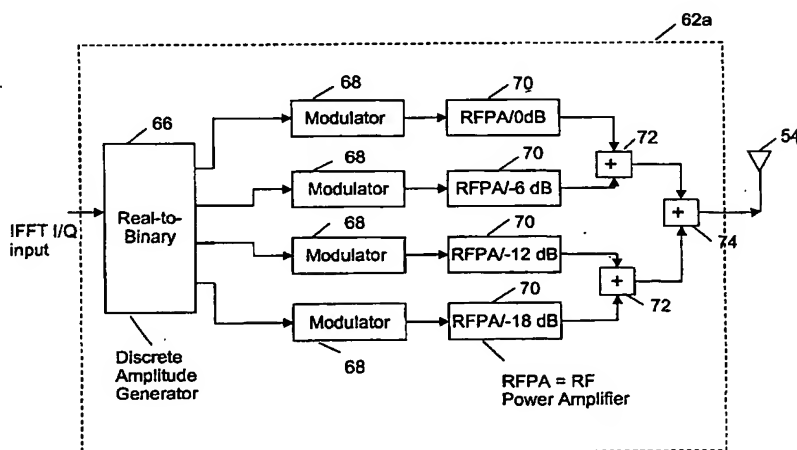
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(54) Title: METHOD AND APPARATUS FOR DISCRETE POWER SYNTHESIS OF MULTICARRIER SIGNALS WITH CONSTANT ENVELOPE POWER AMPLIFIERS



(57) Abstract: A power synthesizer is in several ( $n$ ) discrete stages, each stage having a discrete amplitude, constant envelope amplifier coupled in series with a continuous phase modulator. Each modulator is actuated simultaneously, but not necessarily to modulate the signal phase similarly. For circuit power combining, the modulators are coupled to inputs of the amplifiers, while the separately modulated and amplified bits are combined prior to being fed to the antenna. For spatial power combining, each modulator is coupled to the input of an amplifier which in turn feeds one of several antennas. Each stage operates on one bit, and each successive  $n^{\text{th}}$  stage amplifies the input bit by a factor of  $2^{n-1}$ . Preferably, a discrete amplitude generator converts an (analog) output of an IFFT block to a binary sequence, and each bit is fed to a separate stage. The power synthesizer converts a digital output of the discrete amplitude generator to analog at RF rather than at baseband, rendering a baseband DAC, and a separate upconverter, unnecessary.



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